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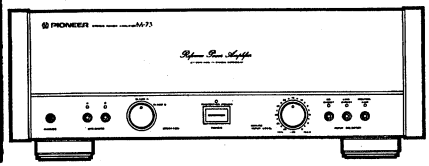
PION-02860

Service Manual



ORDER NO.
ARP2101

STEREO POWER AMPLIFIER

M-73

MODEL M-73 HAS FOLLOWING VERSIONS :

Type	Power requirement	Export destination
HEZ	AC220V,240V (switchable) *	West Germany
HB	AC220V,240V (switchable) *	United Kingdom

* Change the connection of the power transformers (T1 and T2) lead wire.

- **This manual is applicable to the M-73/HEZ and HB types.**
- **As to the HB type, refer to page 25.**
- **Ce manuel pour le service comprend les explications de réglage en français.**
- **Este manual de servicio trata del método ajuste escrito en español.**

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1. EXPLODED VIEWS, PACKING AND PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

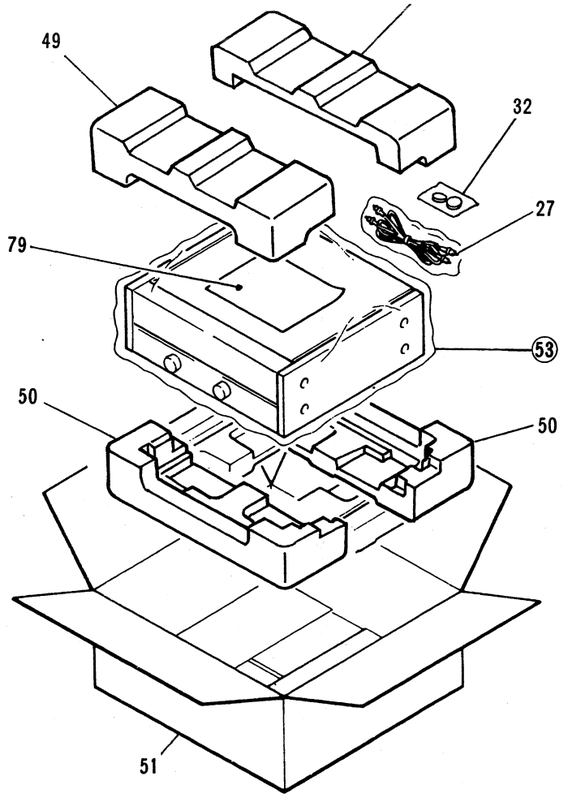
Parts list of Exterior and packing

Mark	No.	Description	Parts No.
	1	INPUT Assembly	AWZ3065
	2	PS Assembly	AWZ3066
	3	KNOB	AAB1175
	4	PUSH KNOB	AAD1366
	5	KNOB (POWER)	AAD1835
	6	SP−LCH Assembly	AWZ3067
	7	NAME PLATE (METAL)	AAM1001
	8	SP−RCH Assembly	AWZ3068
	9	FRONT Assembly	AWZ3069
	10	POWER L Assembly	AWZ3076
	11	SCREW	ABA−298
	12	SCREW (STEEL)	ABA1004
	13	SCREW (STEEL)	ABA1009
	14	SCREW (STEEL)	ABA1011
	15	SCREW (STEEL)	ABA1014
	16	SCREW (STEEL)	ABA1047
	17	SCREW (STEEL)	ABA1048
	18	SCREW (STEEL)	ABA1050
	19	SCREW	ABA1082
	20	SCREW (STEEL)	ABA1086
	21	SCREW	ABA1088
	22	WASHER	ABE1009
	23	WASHER	ABF1017
	24	COIL SPRING A	ABH1056
	25	FLANGE NUT M9	ABN-048
	26	NUT	ABN-065
	27	PULG CORD	ADE1013
⚠	28	AC POWER CORD	ADG1036
	29	GROUND LEAD	
	30	LEAD WIRE	
	31	LEAD WIRE	
	32	SPACER SET	AEA1010
	33	CUSHION C (RUBBER)	
	34	CUSHION (RUBBER)	
	35	CUSHION C (RUBBER)	
	36	POWER R Assembly	AWZ3078
	37	COVER	
	38	STRAIN RELIEF	AEC-882
	39	BINDER	
	40	PCB HOLDER	
	41	SPACER	
	42	COLOR	AEC1165
	43	BARRIER	
	44	BARRIER	
	45	SHEET	AEE1014
	46	VOL−F Assembly	
	47	REG Assembly	
	48	HEAD PHONE Assembly	
	49	STYROL PROTECTOR	AHA1033
	50	STYROL PROTECTOR	AHA1034
	51	PACKING CASE	AHD1925
	52	SW Assembly	
	53	PACKING SHEET	
	54	TERMINAL SCREW	
	55	SHORT PIN PLUG	AKM-050
	56	PANEL BASE	AMB1685
	57	FOOT	AMR1158
	58	FOOT	AMR1159
	59	INDICATING LENS	AMR1160
	60	JOINT	AMR1178
	61	HEAT SINK HOLDER	AMR2193
	62	SIDE BOARD R	AMS1049
	63	SIDE BOARD L	AMS1050
	64	SIDE FRAME R	
	65	SIDE FRAME L	
	66	TRANS. FRAME	
	67	FRONT PANEL	ANB1419
	68	REAR PANEL	
	69	PANEL STAY	
	70	METAL BONNET	ANE1253
	71	BOTTOM PLATE	
	72	PCB HOLDER	ANG1474
	73	EARTH PLATE	
	74	HEAT SINK A	
	75	HEAT SINK B	
	76	HEAT SINK C	
	77	SHIELD CASE	
	78	SHAFT	ANL1033
	79	OPERATING INSTRUCTIONS	ARE1166
	80	PIN JACK Assembly	

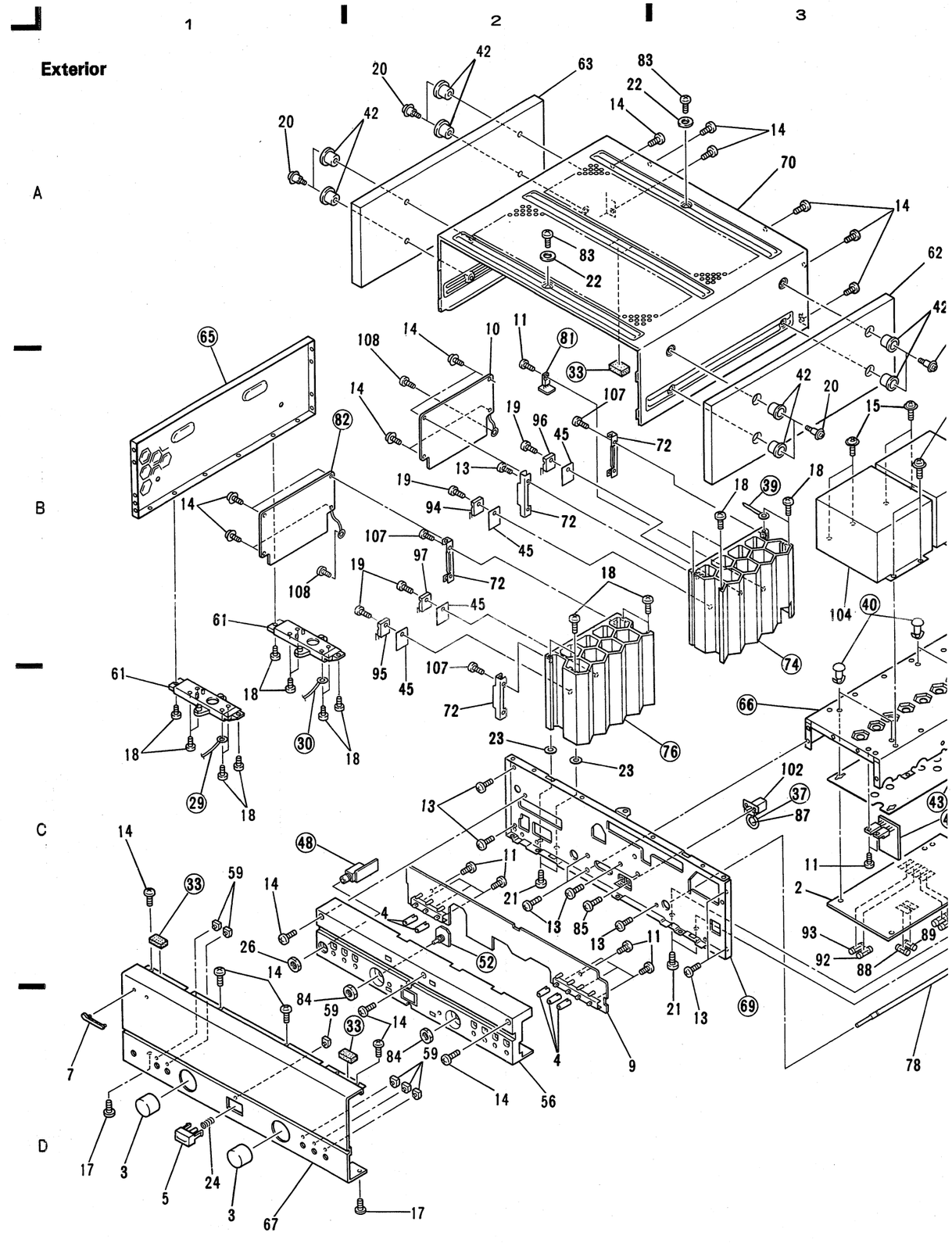
Mark	No.	Description	Parts No.
	81	BIAS 1 Assembly	
	82	REINFORCE L Assembly	
	83	SCREW	BBZ40P080FZK
	84	NUT	NK90FCU
	85	SCREW	VMZ30P060FCU
⚠	86	ELECTROLYTIC CAPACIT, C1	ACH1160
⚠	87	CKA (0.01/AC400V, C2)	ACG1003
⚠	88	FUSE (T800MA, FU1)	AEK-031
⚠	89	FUSE (T800MA, FU2)	AEK-031
⚠	90	FUSE (T5A, FU3)	AEK-015
⚠	91	FUSE (T5A, FU4)	AEK-015
⚠	92	FUSE (T3.15A, FU5)	AEK-042
⚠	93	FUSE (T3.15A, FU6)	AEK-042
⚠	94	TRANSISTOR (Q1)	2SC3281
⚠	95	TRANSISTOR (Q2)	2SC3281

Mark	No.	Description	Parts No.
⚠	96	TRANSISTOR (Q3)	2SA1302
⚠	97	TRANSISTOR (Q4)	2SA1302
⚠	98	TRANSISTOR (Q5)	2SA1302
⚠	99	TRANSISTOR (Q6)	2SA1302
⚠	100	TRANSISTOR (Q7)	2SC3281
⚠	101	TRANSISTOR (Q8)	2SC3281
⚠	102	PUSH SWITCH (POWER, S1)	ASG-553
⚠	103	POWER TRANSFORMER (T1)	ATS1298
⚠	104	POWER TRANSFORMER (T2)	ATS1299
	105	REINFORCE R Assembly	
	106	BIAS 3 Assembly	
	107	SCREW (STEEL)	ABA1115
	108	SCREW	BBZ30P050FZK

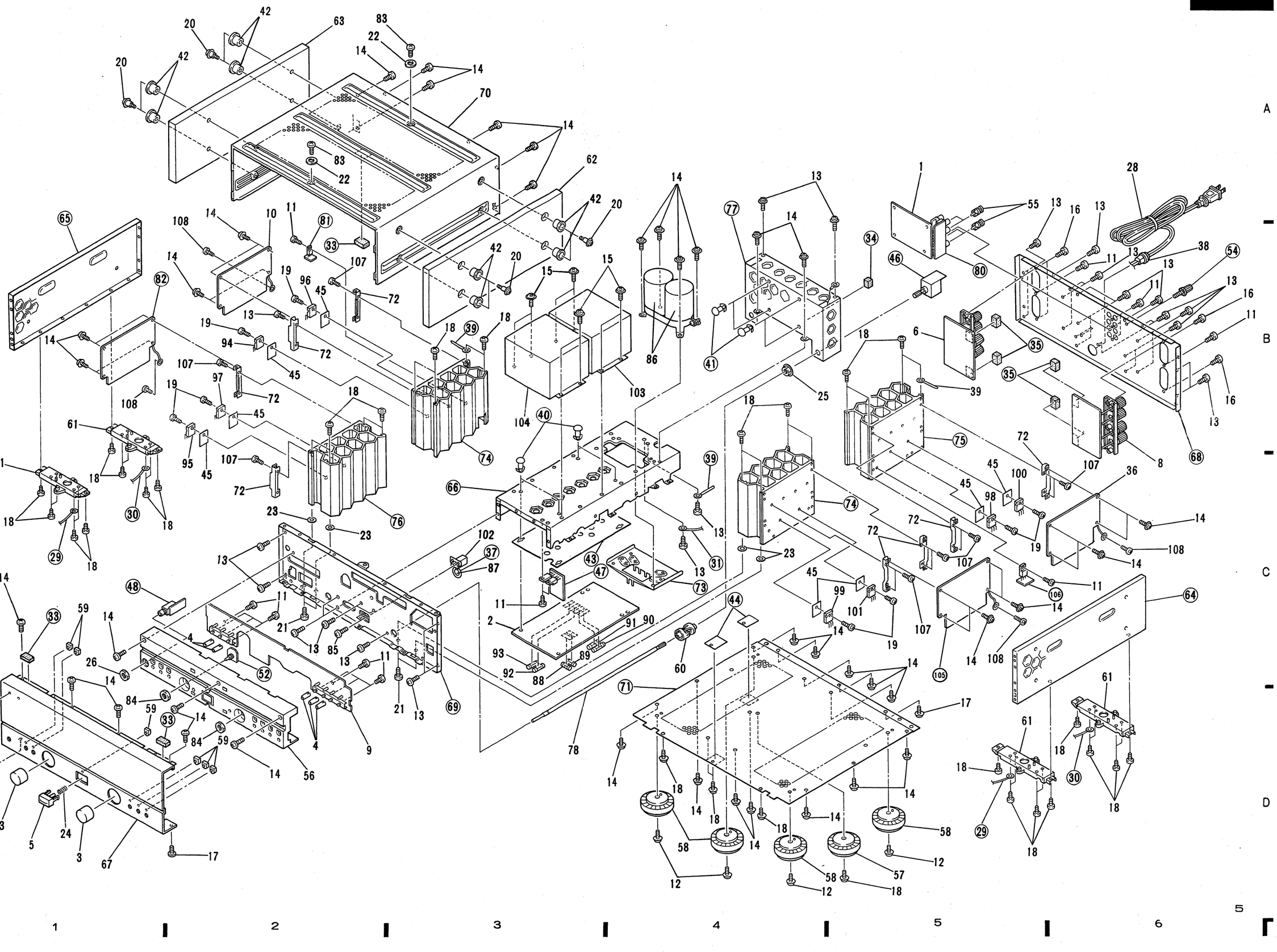
packing



Exterior



Exterior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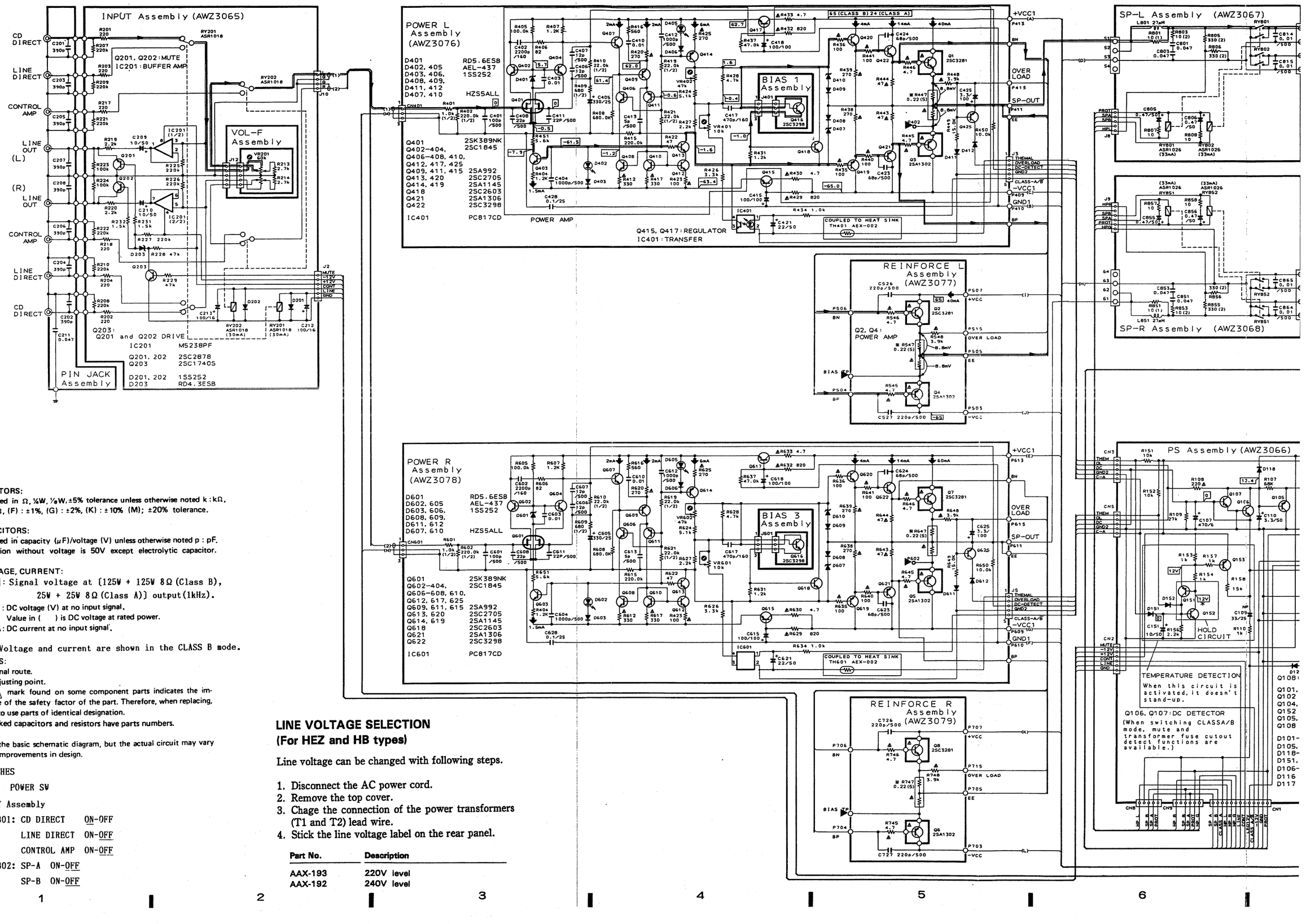
2. SCHEMATIC AND P.C.BOARDS CONNECTION DIAGRAM



1. RESISTORS:
   Indicated in Ω, ¼W, ⅛W, ±5% tolerance unless otherwise noted k : kΩ, M : MΩ, (F) : ±1%, (G) : ±2%, (K) : ±10% (M); ±20% tolerance.

2. CAPACITORS:
   Indicated in capacity (μF)/voltage (V) unless otherwise noted p : pF.
   Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE, CURRENT:
   V : Signal voltage at [125W + 125W 8Ω (Class B), 25W + 25W 8Ω (Class A)] output (1kHz).
   : DC voltage (V) at no input signal.
   Value in ( ) is DC voltage at rated power.
   ⇦ mA : DC current at no input signal.

   NOTE; Voltage and current are shown in the CLASS B mode.

4. OTHERS:
   ➡ : Signal route.
   ⊘ : Adjusting point.
   The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
   ※ marked capacitors and resistors have parts numbers.

   This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

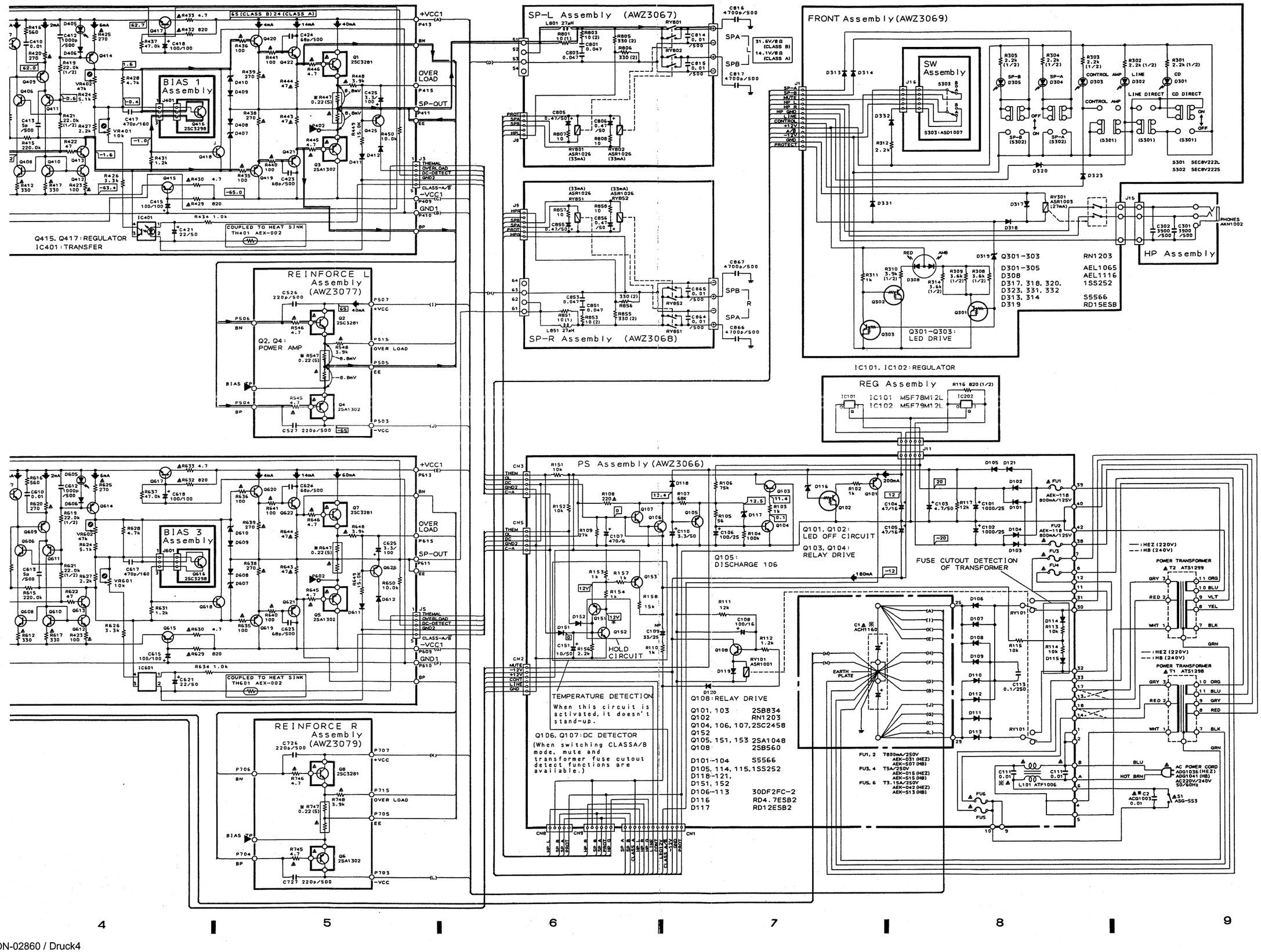
5. SWITCHES
   S1: POWER SW
   FRONT Assembly
   S301: CD DIRECT ON-OFF
   LINE DIRECT ON-OFF
   CONTROL AMP ON-OFF
   S302: SP-A ON-OFF
   SP-B ON-OFF

LINE VOLTAGE SELECTION
(For HEZ and HB types)

Line voltage can be changed with following steps.

1. Disconnect the AC power cord.
2. Remove the top cover.
3. Chage the connection of the power transformers (T1 and T2) lead wire.
4. Stick the line voltage label on the rear panel.

Part No.	Description
AAX-193	220V level
AAX-192	240V level


BIAS 1 Assembly
BIAS 3 Assembly
REINFORCE L Assembly (AWZ3077)
REINFORCE R Assembly (AWZ3079)
SP-L Assembly (AWZ3067)
SP-R Assembly (AWZ3068)
PS Assembly (AWZ3066)
FRONT Assembly (AWZ3069)
SW Assembly
HP Assembly
REG Assembly
Q415, Q417 : REGULATOR
IC401 : TRANSFER
IC101, IC102 : REGULATOR
Q2, Q4 : POWER AMP
Q301-Q303 : LED DRIVE
Q101, Q102 : LED OFF CIRCUIT
Q103, Q104 : RELAY DRIVE
Q105 : DISCHARGE 106
Q108 : RELAY DRIVE
HOLD CIRCUIT
TEMPERATURE DETECTION
When this circuit is activated, it doesn't stand-up.
Q106, Q107 : DC DETECTOR
(When switching CLASSA/B mode, mute and transformer fuse cutout detect functions are available.)
FUSE CUTOUT DETECTION OF TRANSFORMER
EARTH PLATE
COUPLED TO HEAT SINK TH401 AEX-002
COUPLED TO HEAT SINK TH601 AEX-002
31.6V/8Ω (CLASS B) 14.1V/8Ω (CLASS A)
Q301-303 2SB834
D301-305 RN1203
D308 AEL1065
D317, 318, 320, AEL1116
D323, 331, 332 1SS252
D313, 314 S5566
D319 RD15ESB
IC101 IC101 M5F78M12L
IC102 M5F79M12L
Q101, 103 2SB834
Q102 RN1203
Q104, 106, 107, 2SC2458
Q152
Q105, 151, 153 2SA1048
Q108 2SB560
D101-104 S5566
D105, 114, 115, 1SS252
D118-121, D151, 152
D106-113 30DF2FC-2
D116 RD4.7ESB2
D117 RD12ESB2
FU1, 2 T800mA/250V AEK-031 (HEZ) AEK-507 (HB)
FU3, 4 T5A/250V AEK-015 (HEZ) AEK-515 (HB)
FU5, 6 T3.15A/250V AEK-042 (HEZ) AEK-513 (HB)
S301 SEC8V222L
S302 SEC8V222S
RN1203
AEL1065
AEL1116
1SS252
S5566
RD15ESB
PHONES AKN1002
AC POWER CORD ADG1036 (HEZ) ADG1041 (HB) AC220V/240V 50/60Hz
POWER TRANSFORMER T2 ATS1299
POWER TRANSFORMER T1 ATS1298
:HEZ (220V)
:HB (240V)
+VCC1
-VCC1
GND1
OVER LOAD
SP-OUT
THERMAL
OVERLOAD
DC-DETECT
GND2
CLASS-A/B
+VCC
-VCC
BIAS SP
BN
BP
EE

NOTE

1. This P.C.B connection diagram is viewed from the parts mounted side.
2. The parts which have been mounted on the board can be replaced with those shown with the corresponding wiring symbols listed in the following Table.

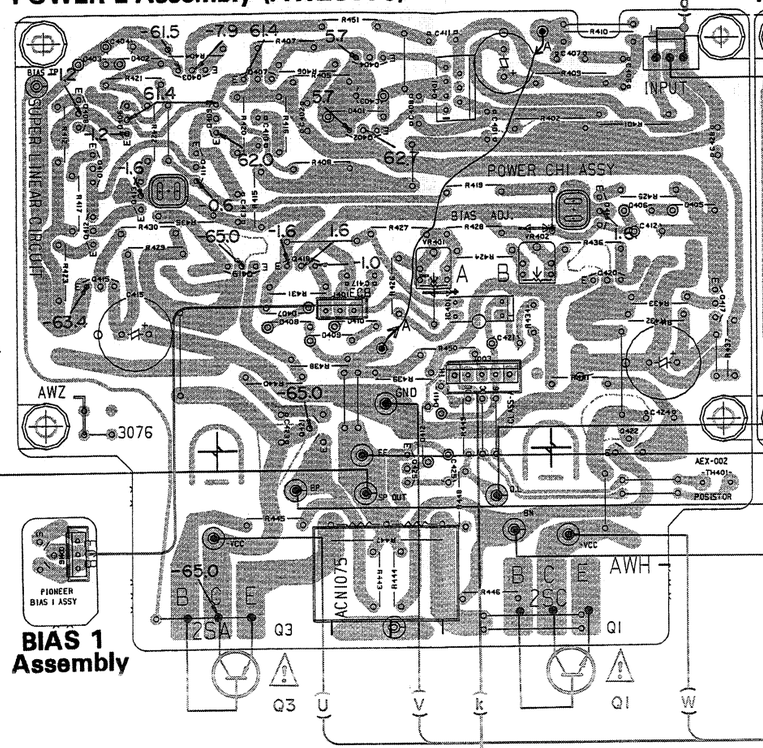
P.C.B. pattern diagram indication	Corresponding part symbol	Part Name
Q504 (E B C)	or (E B C)	Transistor
Q215 (E B C)	(E B C)	Radiator type transistor
D203	D203	Diode
R237	R237	Resistor
C513		Capacitor (Polarity)
C518		Capacitor (Non-polarity)

Others

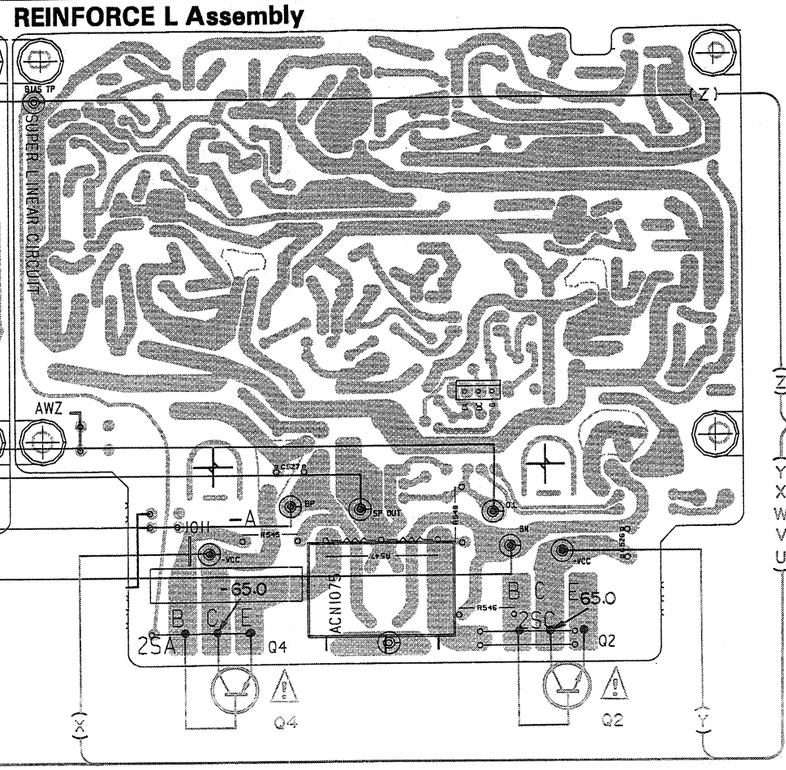
P.C.B. pattern diagram indication	Part Name
IC	IC
S	Switch
RY	Relay
L	Coil
F	Filter
VR	Variable resistor or Semi-fixed resistor

3. The capacitor terminal marked with ⊖(double circles) shows negative termianl.
4. The diode terminal marked with ◎(double circles) shows cathode side.
5. The transistor terminal to which E is affixed shows the emitter.

POWER L Assembly (AWZ3076)

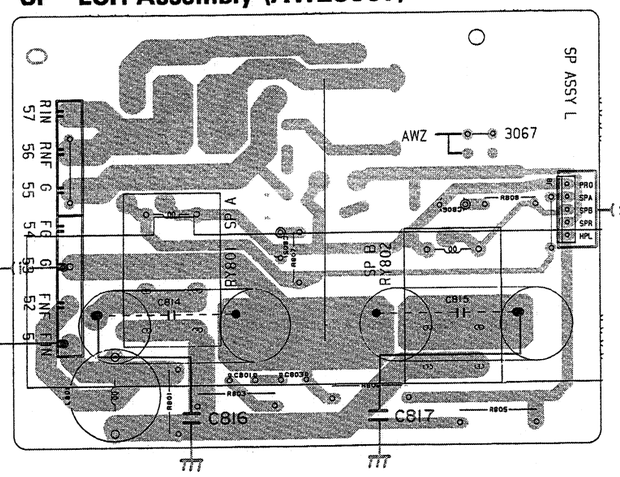


REINFORCE L Assembly

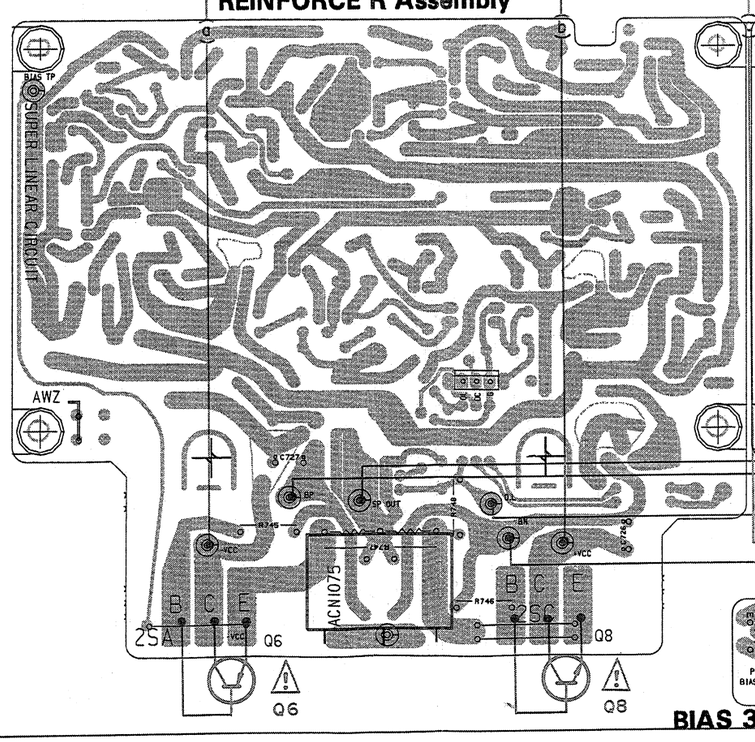


BIAS 1 Assembly

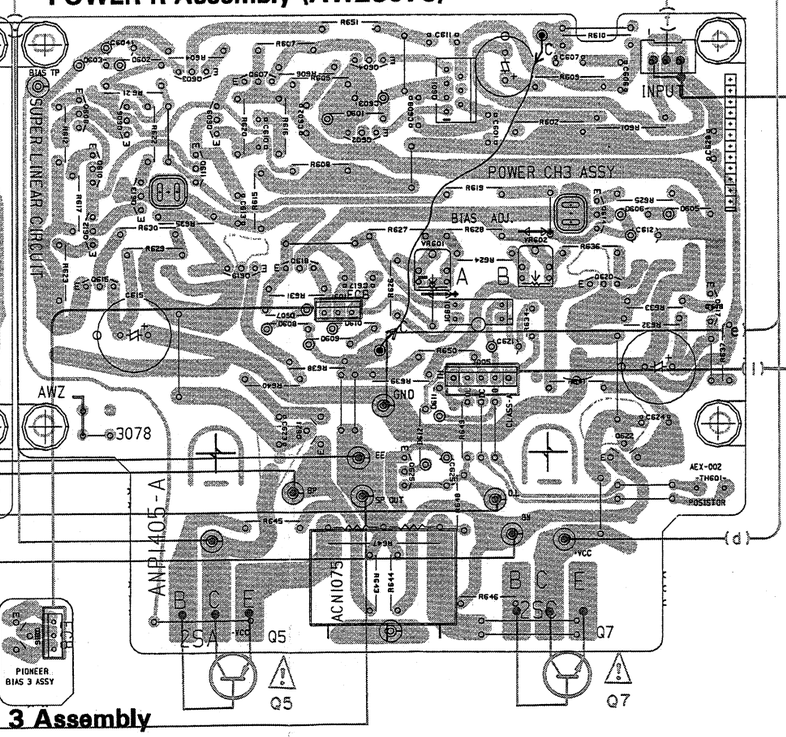
SP−LCH Assembly (AWZ3067)



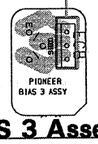
REINFORCE R Assembly



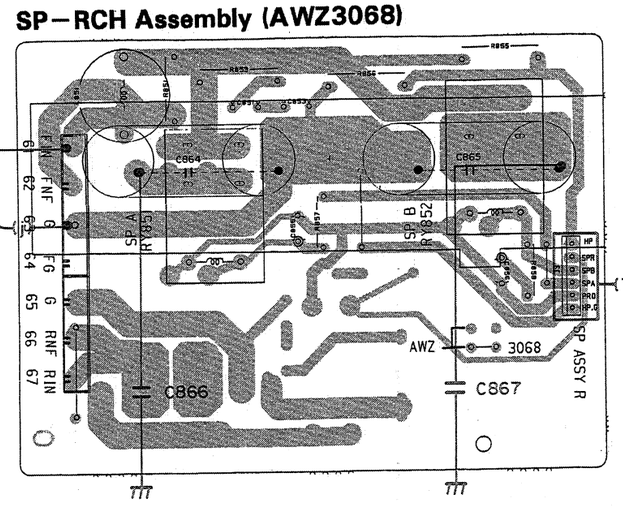
POWER R Assembly (AWZ3078)



BIAS 3 Assembly



SP−RCH Assembly (AWZ3068)



HEAD PHONE Assembly

FRONT Assembly (AWZ3069)

VOL−F Assembly

REG Assembly

SW Assembly

PS Assembly (AWZ3066)

INPUT Assembly (AWZ3065)

PIN JACK Assembly

AC POWER CORD
AC 220V/240V
50/60Hz

INPUT Assemply (AWZ3068)

MIC JACK Assemply

PS Assemply (AWZ3068)

REC Assemply

WS Assemply

VOL-T Assemply

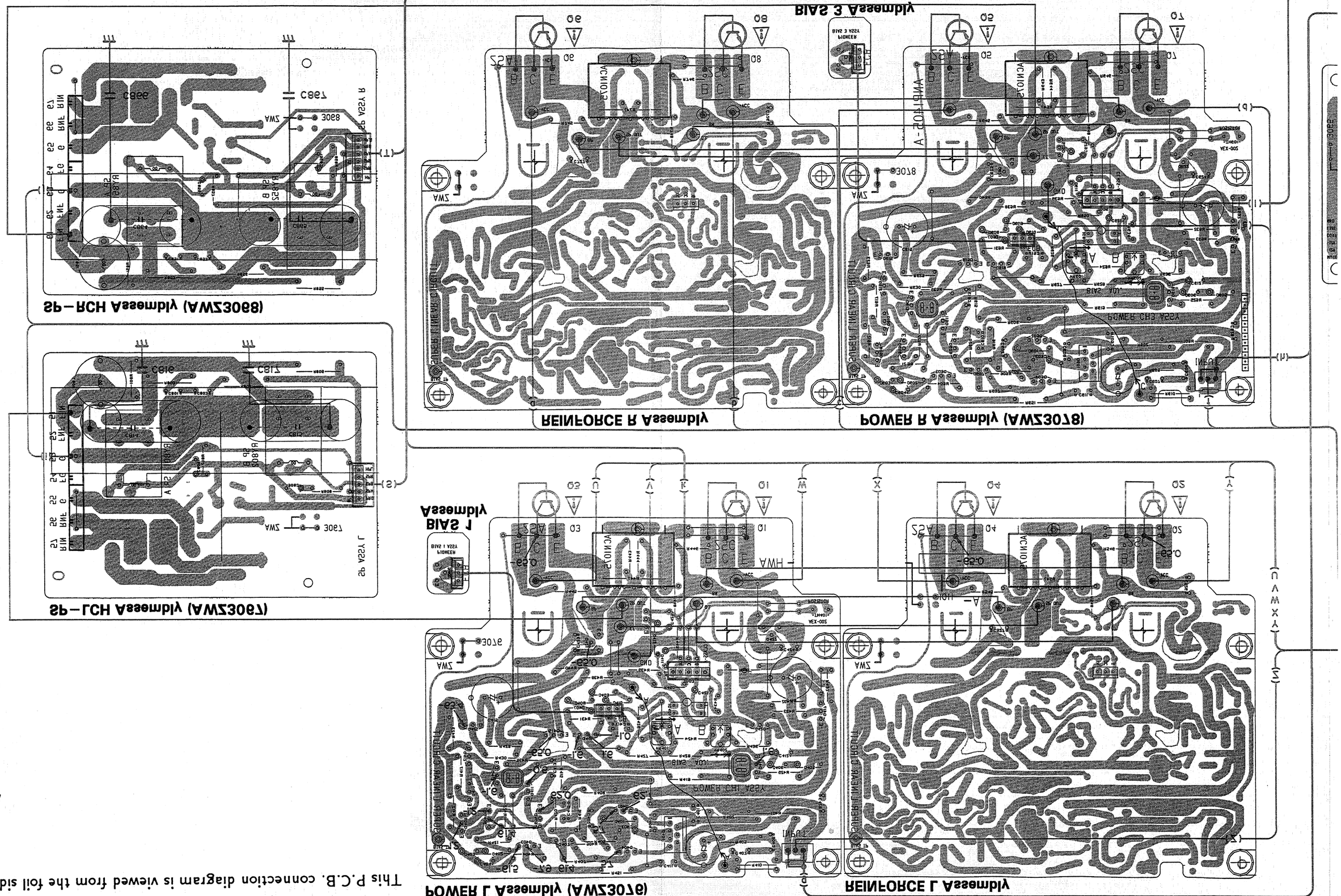
HEAD PHONE Assemply

FRONT Assemply (AWZ3068)

POWER TRANSFORMER T1

POWER TRANSFORMER T2

AC POWER CORD
AC 220/240V
AC 110/120V


BIAS 3 Assemply
REINFORCE R Assemply
POWER R Assemply (AWZ3078)
SP-RCH Assemply (AWZ3068)
BIAS 1 Assemply
POWER L Assemply (AWZ3079)
REINFORCE L Assemply
SP-LCH Assemply (AWZ3067)
This P.C.B. connection diagram is viewed from the foil side.

3. P.C.B 's PARTS LIST

NOTES:

- *Parts without part number cannot be supplied.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 × 10¹*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 × 10³*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ	*562 × 10¹*	*5621*	*RN1/4SR 5 6 2 1 F*

Mark	No.	Description	Parts No.
BIAS 1 ASSEMBLY			
SEMICONDUCTOR			
	Q416	TRANSISTOR	2SC3298
POWER L ASSEMBLY (AWZ3076)			
SEMICONDUCTORS			
	IC401	PHOTOCUPLER	PC817CD
	Q401	N-DUAL-FET	2SK389NK
	Q402–404	TRANSISTOR	2SC1845
	Q406–408	TRANSISTOR	2SC1845
	Q409	TRANSISTOR	2SA992
	Q410	TRANSISTOR	2SC1845
	Q411	TRANSISTOR	2SA992
	Q412	TRANSISTOR	2SC1845
	Q413	TRANSISTOR	2SC2705
	Q414	TRANSISTOR	2SA1145
	Q415	TRANSISTOR	2SA992
	Q417	TRANSISTOR	2SC1845
	Q418	TRANSISTOR	2SC2603
	Q419	TRANSISTOR	2SA1145
	Q420	TRANSISTOR	2SC2705
	Q421	TRANSISTOR	2SA1306
	Q422	TRANSISTOR	2SC3298
	Q425	TRANSISTOR	2SC1845
	D401	ZENER DIODE	RD5.6ESB
	D402	LED(RED)	AEL-437
	D403	DIODE	1SS252
	D405	LED(RED)	AEL-437
	D406	DIODE	1SS252
	D407	ZENER DIODE	HZS5ALL
	D408,409	DIODE	1SS252
	D410	ZENER DIODE	HZS5ALL
	D411,412	DIODE	1SS252

Mark	No.	Description	Parts No.
CAPACITORS			
	C401	MICA CAPACITOR	CMA101J500
	C402	PL.STYRENE CAPACITOR	CQSXA222J160
	C403	AUDIO FILM CAPACITOR	CFTXA103J50
	C404	CERAMIC CAPACITOR	CKDYB102K500
	C405	ELECTROLYTIC CAPACIT	CEXA331M25
	C406,407	MICA CAPACITOR	CMA120J500
	C408	MICA CAPACITOR	CMA220J500
	C410	AUDIO FILM CAPACITOR	CFTXA103J50
	C411	MICA CAPACITOR	CMA220J500
	C412	CERAMIC CAPACITOR	CKDYB102K500
	C413	MICA CAPACITOR	CMA050D500
	C415	ELECTROLYTIC CAPACIT	CEXA101M2A
	C417	PL.STYRENE CAPACITOR	CQSXA471J160
	C418	ELECTROLYTIC CAPACIT	CEXA101M2A
	C420	ELECTR.CAPACITOR	CEXA100M50
	C421	ELECTR.CAPACITOR	CEAS220M50
	C423,424	MICA CAPACITOR	CMA680J500
	C425	ELECTROLYTIC CAPACIT	CEHAQ3R3M2A
	C428	CERAMIC CAPACITOR	CKCYX104M25
RESISTORS			
	R401	CARBON FILM RESISTOR	RDR1/2PM102J
	R402	CARBON FILM RESISTOR	RDR1/2PM224J
	R404	CARBON FILM RESISTOR	RD1/4PM122J
	R405	CARBON FILM RESISTOR	RD1/4PM104J
	R406	CARBON FILM RESISTOR	RD1/4PM820J

Mark	No.	Description	Parts No.
	R407	CARBON FILM RESISTOR	RD1/4PM122J
	R408	CARBON FILM RESISTOR	RD1/4PM684J
	R409	CARBON FILM RESISTOR	RDR1/2PM681J
	R410	CARBON FILM RESISTOR	RDR1/2PM223J
	R415	CARBON FILM RESISTOR	RDR1/4PM224J
	R416	CARBON FILM RESISTOR	RD1/4PM561J
	R419,421	CARBONFILM RESISTOR	RD1/2PM223J
	R422	CARBON FILM RESISTOR	RD1/4PM470J
	R424	CARBON FILM RESISTOR	RD1/4PM512J
	R426	CARBON FILM RESISTOR	RD1/4PM332J
	R427	CARBON FILM RESISTOR	RD1/4PM222J
	R428	CARBON FILM RESISTOR	RD1/4PM512J
	R431	CARBON FILM RESISTOR	RD1/4PM122J
	R434	CARBONFILM RESISTOR	RD1/8PM102J
	R437	CARBON FILM RESISTOR	RD1/4PM473J
	R447	RESISTOR (0.33, 5W)	ACN1075
	R448	CARBON FILM RESISTOR	RD1/4PMF392J
	R449	CARBONFILM RESISTOR	RD1/8PM153J
	R450	CARBONFILM RESISTOR	RD1/4PM103J
	R451	CARBON FILM RESISTOR	RD1/4PM562J
	TH401		AEX-002
	VR401	VR	ACP1043
	VR402	VR	ACP1045
		Other resistors	RFA1/4PS□□□J

REINFORCE L ASSEMBLY

CAPACITORS

C526,527	MICA CAPACITOR	CMA221J500

RESISTORS

R545,546	FUSLIBLE RESISTOR	RFA1/4PS4R7J
R547	RESISTOR (0.33, 5W)	ACN1075
R548	CARBON FILM RESISTOR	RD1/4PMF392J

Mark	No.	Description	Parts No.

POWER R ASSEMBLY (AWZ3078)

SEMICONDUCTORS

IC601	PHOTOCUPLER	PC817CD
Q601	N-DUAL-FET	2SK389NK
Q602–604	TRANSISTOR	2SC1845
Q606–608	TRANSISTOR	2SC1845
Q609	TRANSISTOR	2SA992
Q610	TRANSISTOR	2SC1845
Q611	TRANSISTOR	2SA992
Q612	TRANSISTOR	2SC1845
Q613	TRANSISTOR	2SC2705
Q614	TRANSISTOR	2SA1145
Q615	TRANSISTOR	2SA992
Q617	TRANSISTOR	2SC1845
Q618	TRANSISTOR	2SC2603
Q619	TRANSISTOR	2SA1145
Q620	TRANSISTOR	2SC2705
Q621	TRANSISTOR	2SA1306
Q622	TRANSISTOR	2SC3298
Q625	TRANSISTOR	2SC1845
D601	ZENER DIODE	RD5.6ESB
D602	LED(RED)	AEL-437
D603	DIODE	1SS252
D605	LED(RED)	AEL-437
D606	DIODE	1SS252
D607	ZENER DIODE	HZS5ALL
D608,609	DIODE	1SS252
D610	ZENER DIODE	HZS5ALL
D611,612	DIODE	1SS252

CAPACITORS

C601	MICA CAPACITOR	CMA101J500
C602	PL.STYRENE CAPACITOR	CQSXA222J160
C603	AUDIO FILM CAPACITOR	CFTXA103J50
C604	CERAMIC CAPACITOR	CKDYB102K500
C605	ELECTROLYTIC CAPACIT	CEXA331M25
C606,607	MICA CAPACITOR	CMA120J500
C608	MICA CAPACITOR	CMA220J500
C610	AUDIO FILM CAPACITOR	CFTXA103J50
C611	MICA CAPACITOR	CMA220J500
C612	CERAMIC CAPACITOR	CKDYB102K500
C613	MICA CAPACITOR	CMA050D500
C615	ELECTROLYTIC CAPACIT	CEXA101M2A
C617	PL.STYRENE CAPACITOR	CQSXA471J160
C618	ELECTROLYTIC CAPACIT	CEXA101M2A
C620	ELECTROLYTIC CAPACIT	CEXA100M50

Mark	No.	Description	Parts No.
	C621	ELECTR.CAPACITOR	CEAS220M50
	C623,624	MICA CAPACITOR	CMA680J500
	C625	ELECTROLYTIC CAPACIT	CEHAQ3R3M2A
	C628	CERAMIC CAPACITOR	CKCYX104M25
RESISTORS			
	R601	CARBON FILM RESISTOR	RDR1/2PM102J
	R602	CARBON FILM RESISTOR	RDR1/2PM224J
	R604	CARBON FILM RESISTOR	RD1/4PM122J
	R605	CARBON FILM RESISTOR	RD1/4PM104J
	R606	CARBON FILM RESISTOR	RD1/4PM820J
	R607	CARBON FILM RESISTOR	RD1/4PM122J
	R608	CARBON FILM RESISTOR	RD1/4PM684J
	R609	CARBON FILM RESISTOR	RDR1/2PM681J
	R610	CARBON FILM RESISTOR	RDR1/2PM223J
	R615	CARBON FILM RESISTOR	RDR1/4PM224J
	R616	CARBON FILM RESISTOR	RD1/4PM561J
	R619	CARBONFILM RESISTOR	RD1/2PM223J
	R621	CARBONFILM RESISTOR	RD1/2PM223J
	R622	CARBON FILM RESISTOR	RD1/4PM470J
	R624	CARBON FILM RESISTOR	RD1/4PM512J
	R626	CARBON FILM RESISTOR	RD1/4PM332J
	R627	CARBON FILM RESISTOR	RD1/4PM222J
	R628	CARBON FILM RESISTOR	RD1/4PM512J
	R631	CARBON FILM RESISTOR	RD1/4PM122J
	R634	CARBONFILM RESISTOR	RD1/8PM102J
	R637	CARBON FILM RESISTOR	RD1/4PM473J
	R647	RESISTOR (0.33, 5W)	ACN1075
	R648	CARBON FILM RESISTOR	RD1/4PMF392J
	R649	CARBONFILM RESISTOR	RD1/8PM153J
	R650	CARBONFILM RESISTOR	RD1/4PM103J
	R651	CARBON FILM RESISTOR	RD1/4PM562J

Mark	No.	Description	Parts No.
	TH601	PTC THERMISTOR	AEX-002
	VR601	VR	ACP1043
	VR602	VR	ACP1045
		Other resistors	RFA1/4PS□□□J

REINFORCE R ASSEMBLY

CAPACITORS

C726,727	MICA CAPACITOR	CMA221J500

RESISTORS

R745,746	FUSLIBLE RESISTOR	RFA1/4PS4R7J
R747	RESISTOR (0.33, 5W)	ACN1075
R748	CARBON FILM RESISTOR	RD1/4PMF392J

BIAS 3 ASSEMBLY

SEMICONDUCTOR

Q616	TRANSISTOR	2SC3298

VOL−F ASSEMBLY

RESISTORS

R213,214	CARBON FILM RESISTOR	RDR1/4PM272J
VR201	VR	ACW1006

REG ASSEMBLY

SEMICONDUCTORS

IC101	REGULATOR IC	M5F78M12L
IC102	REGULATOR IC	M5F79M12L

RESISTORS

R116	CARBON FILM RESISTOR	RD1/2PM821J

HEAD PHONE ASSEMBLY

CAPACITORS

C301,302	CERAMIC CAPACITOR	CKCYB392K500

OTHERS

	JACK	AKN1002

Mark	No.	Description	Parts No.
INPUT ASSEMBLY (AWZ3065)			
SEMICONDUCTORS			
	IC201	OP AMP	M5238PF
	Q201,202	TRANSISTOR	2SC2878
	Q203	TRANSISTOR	2SC1740S
	D201,202	DIODE	1SS252
	D203	ZENER DIODE	RD4.3ESB
RELAIES			
	RY201,202	RELAY	ASR1018
CAPACITORS			
	C209,210	ELECTROLYTIC CAPACIT	CEYA100M50
RESISTORS			
	R201−204	CARBON FILM RESISTOR	RDR1/4PM221J
	R207−210	CARBON FILM RESISTOR	RDR1/4PM224J
	R217,218	CARBON FILM RESISTOR	RDR1/4PM221J
	R219,220	CARBON FILM RESISTOR	RDR1/4PM222J
	R221,222	CARBON FILM RESISTOR	RDR1/4PM224J
	R223,224	CARBON FILM RESISTOR	RDR1/4PM104J
	R225,226	CARBON FILM RESISTOR	RDR1/4PM224J
		Other resistors	RD1/8PM□□□J
PS ASSEMBLY (AWZ3066)			
SEMICONDUCTORS			
	Q101	TRANSISTOR	2SB834
	Q102	TRANSISTOR	RN1203
	Q103	TRANSISTOR	2SB834
	Q104	TRANSISTOR	2SC2458
	Q105	TRANSISTOR	2SA1048
	Q106,107	TRANSISTOR	2SC2458
	Q108	TRANSISTOR	2SB560
	Q151	TRANSISTOR	2SA1048
	Q152	TRANSISTOR	2SC2458
	Q153	TRANSISTOR	2SA1048
	D101−104	DIODE	S5566
	D105	DIODE	1SS252
	D106−113	DIODE	30DF2FC-2
	D114,115	DIODE	1SS252
	D116	ZENER DIODE	RD4.7ESB2
	D117	ZENER DIODE	RD12ESB2
	D118−121	DIODE	1SS252
	D151,152	DIODE	1SS252

Mark	No.	Description	Parts No.
RELAY			
	RY101	RELAY	ASR1001
COIL			
	L101	LINE FILTER	ATF1006
CAPACITORS			
	C101,102	ELECTR.CAPACITOR	CEAS102M25
	C103	ELECTR.CAPACITOR	CEAS4R7M50
	C104,105	ELECTR.CAPACITOR	CEAS470M16
	C106	ELECTR.CAPACITOR	CEAS101M25
	C107	ELECTROLYTIC CAPACIT	CEAS471M6
	C108	ELECTR.CAPACITOR	CEAS101M16
	C109	ELECTROLYTIC CAPACIT	CEANP330M25
	C110	ELECTR.CAPACITOR	CEAS3R3M50
	C111	CKA (0.01/AC400V)	ACG1002
	C112	CKA (0.01/AC400V)	
	C113	MYLOR FILM CAPACITOR	CQMA104K250
	C151	ELECTR.CAPACITOR	CEAS100M50
RESISTORS			
	R108	CARBON FILM RESISTOR	RD1/4PMF221J
	R113−115	CARBONFILM RESISTOR	RD1/4PM103J
	R117	CARBON FILM RESISTOR	RD1/4PM123J
		Other resistors	RD1/8PM□□□J
OTHERS			
	CN1	CONNECTOR(13P)	KPE13
	CN2	JUMPER CONNECTOR	KPC6
	CN3,5,8	CONNECTOR(5P)	KPC5
	CN9	JUMPER CONNECTOR	KPC6
SP−LCH ASSEMBLY(AWZ3067)			
RELAIES			
	RY801,802	RELAY	ASR1026
COIL			
	L801	COIL	ATH1001
CAPACITORS			
	C801,803	AUDIO FILM CAPACITOR	CFTXA473J50
	C805,806	ELECTR.CAPACITOR	CEASR47M50
	C814,815	CERAMIC CAPACITOR	CKDYB103K500
	C816,817	CERAMIC CAPACITOR	CKDYB472K500

Mark	No.	Description	Parts No.
RESISTORS			
	R801	METAL OXIDE RESISTOR	RS1PMF100J
	R803	METAL OXIDE RESISTOR	RS2LMF100J
	R805,806	METAL OXIDE RESISTOR	RS2LMF331J
	R807,808	CARBON FILM RESISTOR	RD1/4PM100J
OTHER			
		SPEAKER TERMINAL 4-P	AKE1017

SP-RCH ASSEMBLY(AWZ3068)

RELAIES			
	RY851,852	RELAY	ASR1026
COIL			
	L851	COIL	ATH1001
CAPACITORS			
	C851,853	AUDIO FILM CAPACITOR	CFTXA473J50
	C855,856	ELECTR.CAPACITOR	CEASR47M50
	C864,865	CERAMIC CAPACITOR	CKDYB103K500
	C866,867	CERAMIC CAPACITOR	CKDYB472K500
RESISTORS			
	R851	METAL OXIDE RESISTOR	RS1PMF100J
	R853	METAL OXIDE RESISTOR	RS2LMF100J
	R855,856	METAL OXIDE RESISTOR	RS2LMF331J
	R857,858	CARBON FILM RESISTOR	RD1/4PM100J
OTHER			
		SPEAKER TERMINAL 4-P	AKE1017

FRONT ASSEMBLY (AWZ3069)

SEMICONDUCTORS			
	Q301-303	TRANSISTOR	RN1203
	D301-305	LED(RED)	AEL1065
	D308	LED(RED,AMBER)	AEL1116
	D313,314	DIODE	S5566
	D317,318	DIODE	1SS252
	D319	ZENER DIODE	RD15ESB
	D320,323	DIODE	1SS252
	D331,332	DIODE	1SS252

Mark	No.	Description	Parts No.
SWITSHES			
	S301	PUSH SWITCH	SEC8V222L
	S302	PUSH SWITCH	SEC8V22S
RELAY			
	RY301	RELAY	ASR1003
RESISTORS			
	R301-305	CARBON FILM RESISTOR	RD1/2PM222J
	R308,309	CARBON FILM RESISTOR	RD1/2PM362J
	R310	CARBON FILM RESISTOR	RD1/2PM392J
	R311	CARBON FILM RESISTOR	RD1/4PM102J
	R312	CARBON FILM RESISTOR	RD1/4PM222J
	R314	CARBON FILM RESISTOR	RD1/2PM362J

SW ASSEMBLY

SWITCH			
	S303	SWITCH	ASD1007

PIN JACK ASSEMBLY

CAPACITORS			
	C201-208	CERAMIC CAPACITOR	CKDYB391K50
	C211	AUDIO FILM CAPACITOR	CFTXA473J50
OTHERS			
		PHONO JACK 2-P	AKB1151
		PHONO JACK 6-P	AKB1154

4. ADJUSTMENTS

1. Set to the class B mode
2. Wait ten minutes after the power has been turned on.
3. Adjust VR402 so that the voltage difference between BIAS TP and the output JP wire on the Power L assembly becomes 8.8mV (+11mV/−3.3mV). Also adjust VR602 on the Power R assembly using the same procedure.
4. Set to the class A mode.
5. Wait ten minutes.
6. Adjust VR401 so that the voltage difference between BIAS TP and the output JP wire on the Power L assembly becomes 137mV±14mV. Also adjust VR601 on the Power R assembly using the same procedure.
7. Check that the voltage difference between BIAS TP and the output JP wire on the Power L assembly is the same as that between BIAS TP on the reinforced L assembly and the output JP wire on the Power L assembly.
8. Check that the voltage difference between BIAS TP and the output JP wire on the Power R assembly is the same as that between BIAS TP on the reinforce R assembly and the output JP wire on the Power L assembly.

Note :
Steps 1 to 3 should be conducted before steps 4 to 7 and not after it.

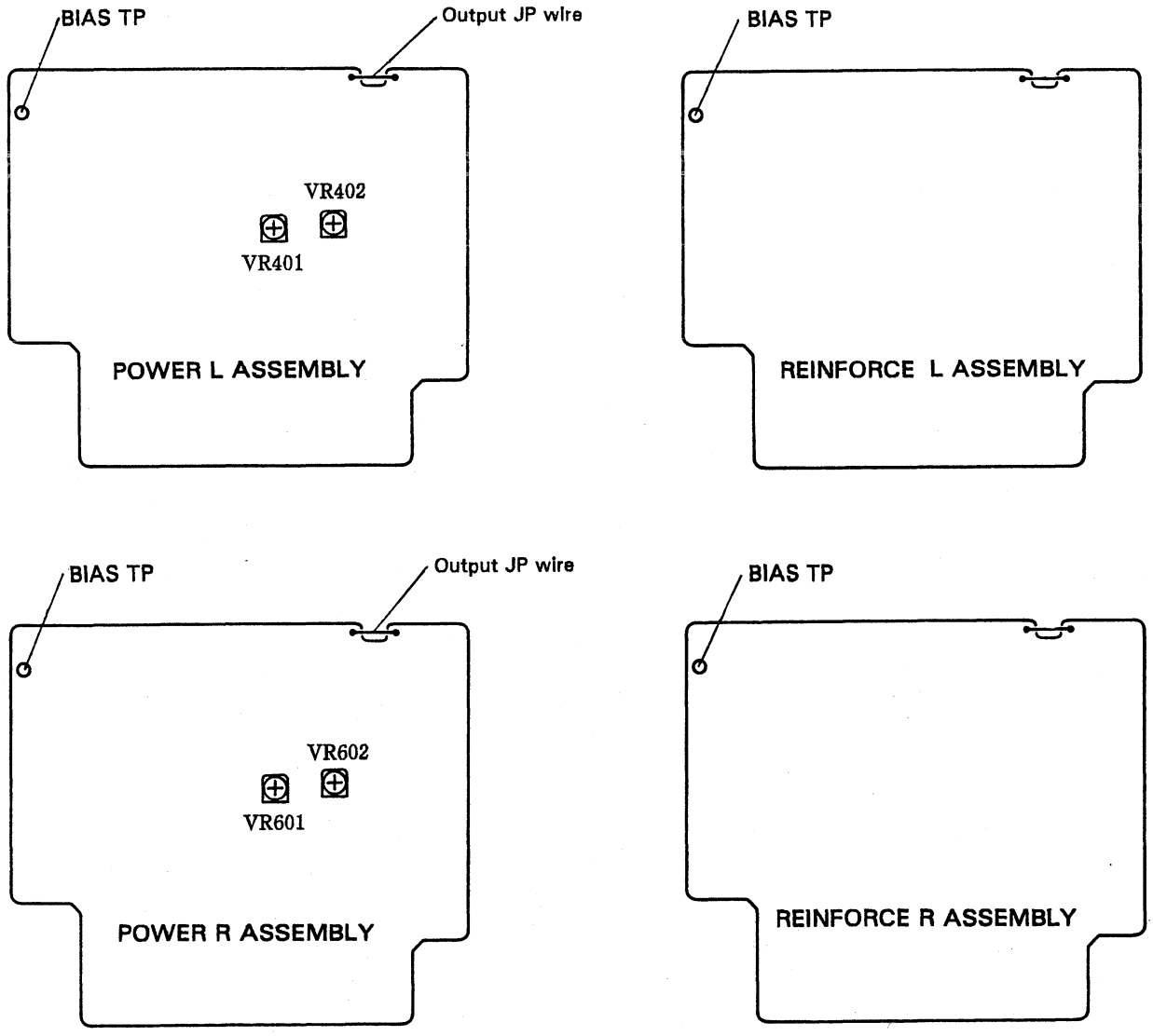


Fig. 4−1 adjustment point

4. RÉGLAGE

1. Mettre sur le mode de classe B.
2. Attendre dix minutes après la mise sous tension.
3. Régler VR402 de manière que la différence de tension entre le point d'essai de polarisation et le cavalier de sortie de l'ensemble gauche d'alimentation devienne égale à 8,8mV(+11mV/−3,3mV). Régler également VR602 sur l'ensemble droit d'alimentation en procédant de la même manière.
4. Mettre sur le mode de classe A.
5. Attendre dix minutes.
6. Régler VR401 de manière que la différence de tension entre le point d'essai de polarisation et le cavalier de sortie de l'ensemble gauche d'alimentation devienne égale à 137mV±14mV. Régler également VR601 sur l'ensemble droit d'alimentation en en procédant de la même manière.
7. Contrôler que la différence de tension entre le point d'essai de polarisation et le cavalier de sortie de l'ensemble gauche d'alimentation est égale à la différence de tension entre le point d'essai de polarisation de l'ensemble gauche de renfort et le cavalier de sortie de l'ensemble gauche d'alimentation.
8. Contrôler que la différence de tension entre le point d'essai de polarisation et le cavalier de sortie de l'ensemble droit d'alimentation est égale à la différence de tension entre le point d'essai de polarisation de l'ensemble droit de renfort et le cavalier de sortie de l'ensemble droit d'alimentation.

Remarque :

Les étapes 1 à 3 devront être effectuées avant les étapes 4 à 7, et non pas après.

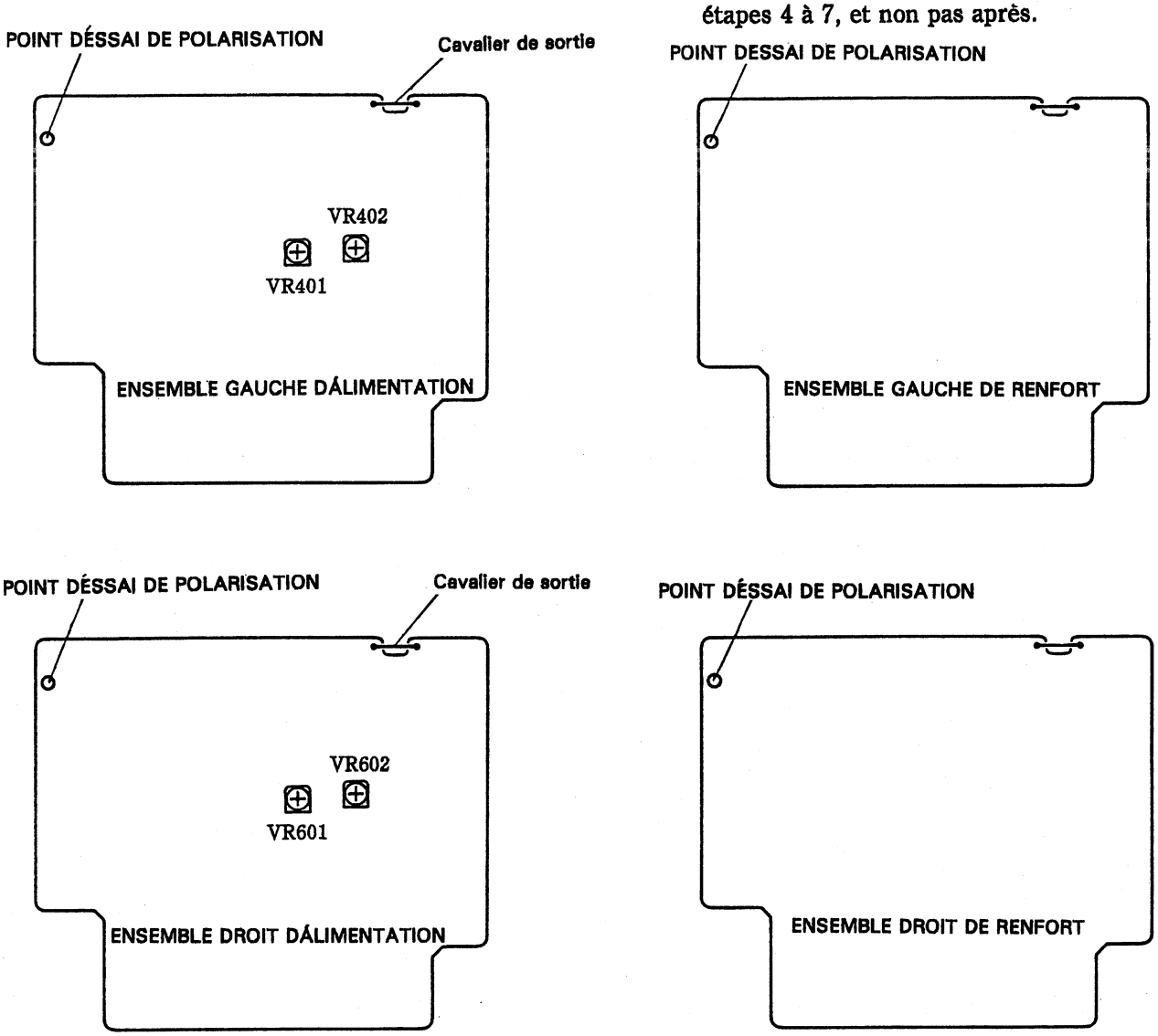


Fig. 4−1 Pointe de réglemente

4. AJUSTE

1. Ajuste al modo de clase B.
2. Espere cinco minutos después de activar la alimentación.
3. Ajuste VR402 de modo que la diferencia de tensión entre el punto de prueba de polarización, y el cable de puenteado de salida en el conjunt derecho de alimentación se convierta en 8.8mV (11mV/−3.3mV).También ajuste VR602 en el conjunto derecho de alimentación usando el mismo procedimiento.
4. Ajuste al modo de clase A.
5. Espere cinco minutos.
6. Ajuste VR401 de modo que la diferencia de tensión entre el punto de prueba de polarización Y el cable de puenteado de salida en el conjunto izquierdo sea de 137mV±14mV.También ajuste VR601 en el conjunto derecho de alimentación usando el mismo procedimiento.
7. Compruebe que la diferencia de tensión entre el punto de prueda de polarización Y el cadle de puenteado de salida en el conjunto izquierdo de alimentación, sea similar como la que existe entre el punto de prueda de polarización en el conjunto derecho de refuerzo, Y el cable de puenteado de salida en el conjunto izquierdo de alimentación.
8. Compruebe que la diferencia de tensión entre el punto de prueba Y el cable de puenteado de salida en el conjunto derecho de alimentación, sea similar como la que existe entre el punto de prueda en el conjunto derecho de refuerzo, Y el cable de puenteado de salida en el conjunto izquierdo de alimentación.

Nota :

Los pasos 1 a 3 deben realizarse antes de los pasos 4 a 7 y no después de los mismos.

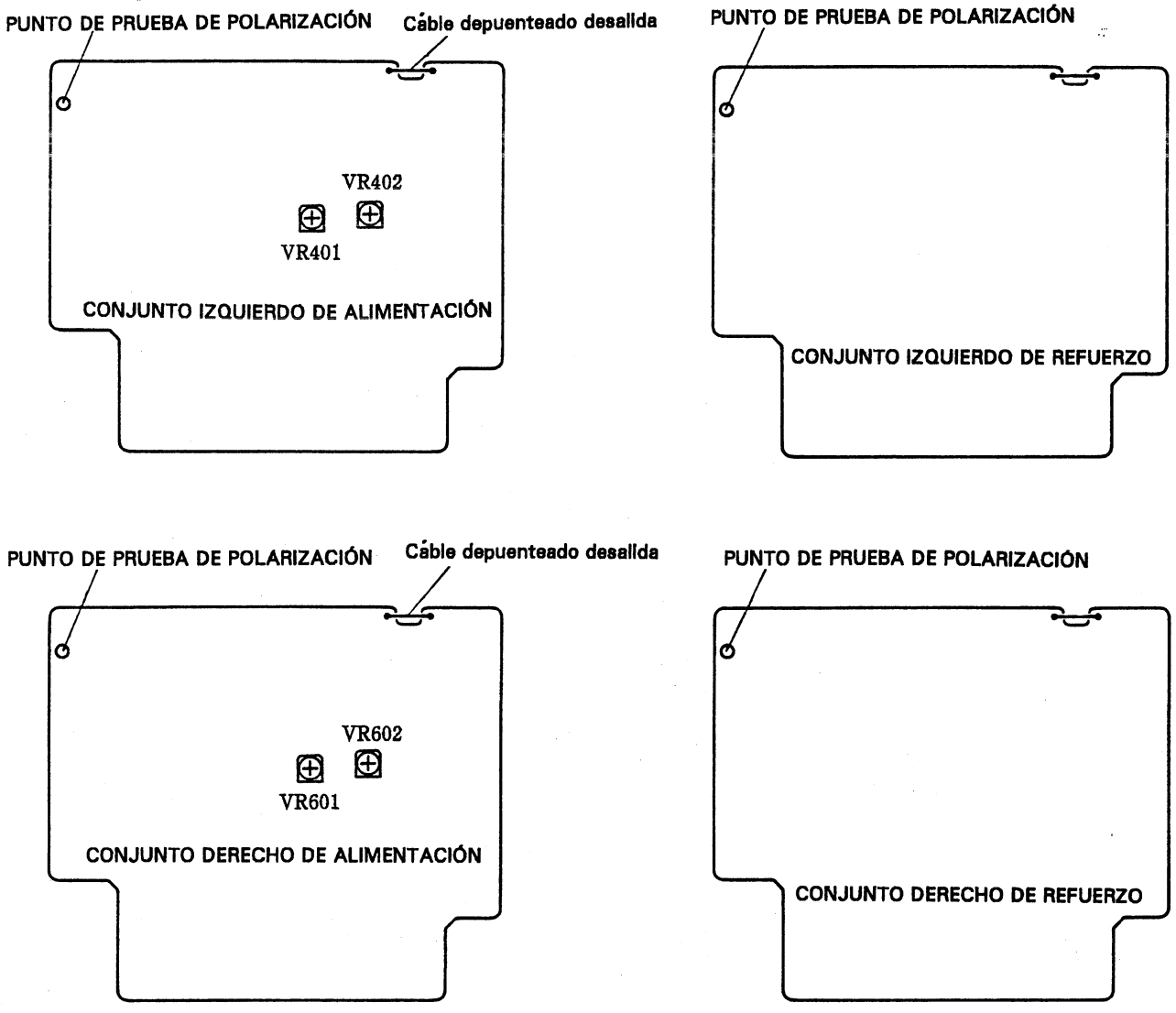


Fig. 4−1 Puntos de ajuste

5. FOR HB TYPE

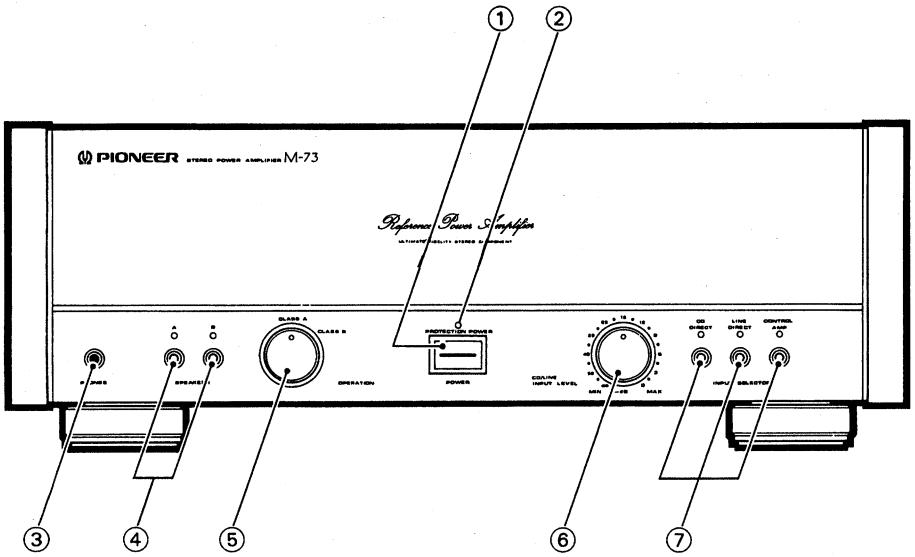
NOTES:
- *Parts without part number cannot be supplied.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Parts marked by "◉" are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.*

CONTRAST OF MISCELLANEOUS PARTS

The M-73/HB type is the same as the M-73/HEZ type with the exception of the following sections.

Mark	Symbol & Description	Part No.		Remarks
		M−73/HEZ type	M−73/HB type	
⚠	FU1,FU2 (T800mA/250V)	AEK−031	AEK−507	
⚠	FU3,FU4 (T5A/250V)	AEK−015	AEK−515	
⚠	FU5,FU6 (T3.15A/250V)	AEK−042	AEK−513	
⚠	AC Power cord	ADG1036	ADG1041	
	Screw (EARTH)	ABA1047	.....	
	Operating instructions (English/German/French/Italian/ Spanish/Dutch/Portuguese/ Swedish)	ARE1166	.....	
	Operating instructions (English)	.....	ARB1267	

6. PANEL FACILITIES



① POWER switch

Press to turn power to this unit ON/OFF.

② PROTECTION/POWER indicator

Lights when the power is turned ON.
Red (protection): Lights immediately after turning on the power, or in the event of a malfunctioning input from the control amplifier. When illuminated, the amplifier. When lighted, the amplifier will not operate.
Yellow (power): Indicates normal operating condition.

③ PHONES jack

When using headphones, connect their plug here.

④ SPEAKERS switch

Use to select the speaker system used.
[A] - Sound is heard from the speaker systems connected to the SPEAKERS A terminals.
[B] - Sound is heard from the speaker systems connected to the SPEAKERS B terminals.
Turn this switch OFF when using headphones.

⑤ OPERATION Selector (CLASS A/CLASS B)

This selector lets you to switch between Class A and Class B amplifier circuits.
Class A delivers high sound quality, while switching to Class B provides higher power output.

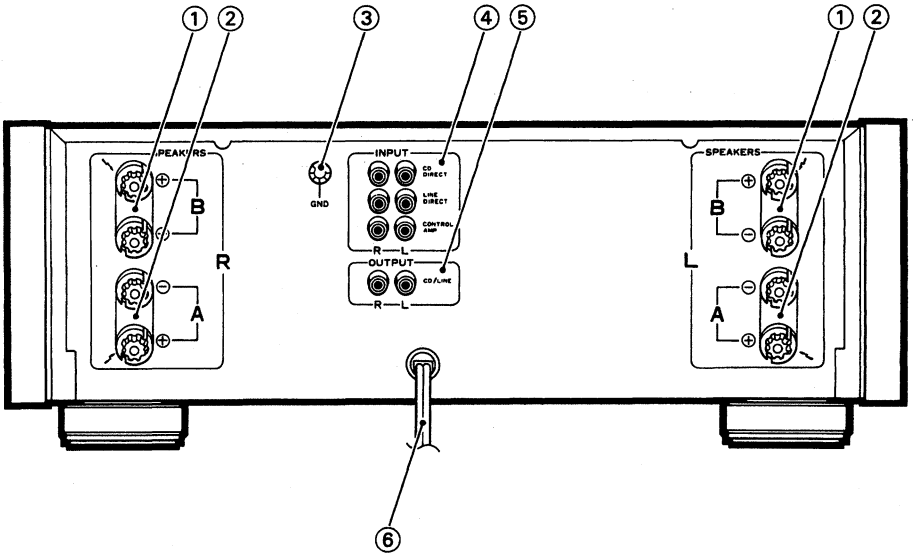
NOTE:
If you switch between Class A and Class B during play, the sound will be muted for a short time and the PROTECTION/POWER indicator will become red. Wait a few seconds until it changes to yellow.

⑥ CD/LINE INPUT LEVEL Control

Use this to regulate input levels from the CD DIRECT INPUT and LINE DIRECT INPUT terminals on the rear panel.

⑦ INPUT SELECTOR Buttons and Indicators

Use these to choose your listening source component. Each button has an indicator above it which lights when the button is pressed.
[CD DIRECT] - This button selects the compact disc player connected to the CD DIRECT INPUT terminals on the rear panel.
[LINE DIRECT] - This button selects the audio component connected to the LINE DIRECT INPUT terminals on the rear panel.
[CONTROL AMP] - This button selects a component connected to the control amplifier.



① SPEAKERS B terminals

Connect R to the right-side speakers of speaker system B (second speaker system), and connect L to the left-side speakers.

② SPEAKERS A terminals

Connect R to the right-side speakers of speaker system A (first speaker system), and connect L to the left-side speakers.

When using two sets of speakers (A and B), be sure that your speakers have a nominal impedance rating of 8 Ω — 16 Ω.
When using only one set of speakers, (A or B) use speakers with a nominal impedance rating of 4 Ω — 16 Ω.

③ Ground terminal (GND)

④ INPUT Terminals

[CD DIRECT] - For playback of a compact disc player
[LINE DIRECT] - For listening directly to the output of an audio component.
[CONTROL AMP] - For use with the control amplifier.

NOTE:
The LINE DIRECT and CONTROL AMP terminals are provided with shorting pin plugs (two each). Before connecting equipment to these terminals, therefore, remove the shorting pin plugs and insert them into unused terminals.

⑤ CD/LINE OUTPUT terminals

The playback signals from the compact disc player or other audio component connected to the rear panel CD DIRECT INPUT or LINE DIRECT INPUT terminals currently in use are output here.
Connect to the control amplifier CD INPUT terminals. (This allows recording of the CD playback on a tape deck connected to the control amplifier.)

⑥ Power cord

POWER-CORD CAUTION

Handle the power cord by the plug. Do not pull out the plug by tugging the cord and never touch the power cord when your hands are wet as this could cause a short circuit or electric shock. Do not place the unit, a piece of furniture, etc., on the power cord, or pinch the cord. Never make a knot in the cord or tie it with other cords. The power cords should be routed such that they are not likely to be stepped on. A damaged power cord can cause fire or give you an electrical shock. Check the power cord once in a while. When you find it damaged, ask your nearest PIONEER authorized service center or your dealer for a replacement.

7. SPECIFICATIONS

Amplifier Section

Continuous power output (both channel driven, measured by Audio Spectrum Analyzer)
20 Hz to 20 kHz,
THD 0.009 % 8 Ω Class B/Class A..... 110 W x 2/20 W x 2
DIN power (both channels driven)
1 kHz, 0.7%, 8 Ω Class B/Class A..... 125 W x 2/25 W x 2
Dynamic power (EIA test signal) Class B
8 Ω..... 170 W
4 Ω..... 300 W
2 Ω..... 325 W
Harmonic distortion (Measured by Audio Spectrum Analyzer)
20 Hz – 20 kHz, 50 W, 8 Ω Class B 0.005%
Input terminals (sensitivity/input impedance)
CONTROL AMP INPUT, CD DIRECT INPUT,
LINE DIRECT INPUT ..... 1 V/40 kΩ
Frequency response
CONTROL AMP INPUT, CD DIRECT INPUT,
LINE DIRECT INPUT, 5 Hz – 150 kHz..... $^{+0}_{-3}$ dB
SN ratio (short circuit, A network)
CONTROL AMP INPUT, CD DIRECT INPUT,
LINE DIRECT INPUT ..... 120 dB

Power section, etc.

Power requirements ..... a.c. 220 V ~, 50/60 Hz
Power consumption ..... 1,000 W
External dimensions ..... 459 (W) x 424 (D) x 163 (H) mm
Weight ..... 20.9 kg

Accessories

Operating Instructions 1
Pin-plug cord 1
Spacer set..... 1

NOTE:

- *Specifications and design subject to possible modification without notice, due to improvements.*